

CELL SEARCHING IN A  
CDMA COMMUNICATIONS SYSTEM

ABSTRACT OF THE DISCLOSURE

A special coding scheme is disclosed for more  
5 effectively acquiring a long code and frame timing during a  
cell search in a CDMA communications system. A code set of  
length M Q-ary code words including symbols from a set of Q  
short codes is defined with certain properties. The primary  
property to be satisfied is that no cyclic shift of a code  
10 word yields a valid code word. The other properties to be  
satisfied are that there is a one-to-one mapping between a  
long code message and a valid code word, and a decoder should  
be able to find both the random shift (thereby implicitly  
finding the frame timing) and the transmitted code word  
15 (i.e., its associated long code indication message) in the  
presence of interference and noise, with some degree of  
accuracy and reasonable complexity.